CalPERS ASSET LIABILITY MANAGEMENT WORKSHOP
SEGMENT 3

Date: November 9, 2010
Segment: Asset Liability Management Workshop: Low QT
Host: Chairman George Diehr
Guests: Allan Milligan, Robert McCory

George Diehr:
There was… at the end of the before-lunch session, there was open discussion, so go ahead. Anybody? Anybody has questions?

Priya Mathur:
I don't know if it's a question so much as statement.

George Diehr:
Yeah.

Priya Mathur:
I do think that this alternative asset allocation is a step in the right direction. As you all know, it's not as far as I would like to go, but, um... So, I don't know, are you looking for a motion? Or is this just a direction from the committee?

George Diehr:
Well, first of all, we just have a discussion about anything – not necessarily that, but anything from the previous session.

Priya Mathur:
Oh, I see okay.

George Diehr:
It's open. We sort of cut that short because we'd run into the lunch hour, so if anybody has any follow-up questions on that?

J J Jelincic:
One question.

George Diehr:
Yes.

J J Jelincic:
Yes, Joe, could you comment some more, relative to the operational aspects of implementing this alternative asset classification, if we end up going in that direction.

Joseph Dear:
So the question is: What impact… what changes would you see sort of operationally going forward, if the alternative classification is adopted? Well, in the very immediate sense, the various candidate portfolios we show you will be

organized according to growth, inflation, liquidity risk. So you'll be looking at risk in that framework. To implement that, we're not going to make major changes in the organization. So, for example, the organization of the work will still be by asset class. The coordination will be… So there will be a global equity group and a fixed income group and an aim group.

The coordination to apply the framework will occur at the Senior Investment Officer, Chief Operating Investment Officer, and Chief Investment Officer level, which is the investment strategy group that we have where we'll consider the risk. We will report to you both the performance, in terms of the classic, asset class performance, as well as reporting risk to you in the new framework. As the work goes forward, we will elaborate on the risk tools we bring to bear, adding to the reports we do on the quarterly risk report, bringing up the new risk system and improving the analysis of the portfolio – both the quantitative side of the analysis as well as qualitative in terms of reporting.

The next application of this will be how to use these… this risk framework in the intermediate term – the sort of dynamic allocation questions. And you'll recall last summer, you heard a presentation from Professor Andrew Lowe from MIT about how to apply various hedging strategies. And that's a set of building blocks that he's continuing to work on and we're contemplating having him back to report to you with the January Board offsite. So the next set of applications in terms of tools will be how we do the dynamic allocation of the risk hedging in the portfolio.

So, I guess to summarize the answer, it's more a change in perspective than it is a change in organization. How we look at the portfolio and how we organize to do the work, and then how we report and discuss portfolio options.

J J Jelincic:
So then, could it be, in some respects, end up being reported both ways in the future?

Joseph Dear:
Yes, well…

J J Jelincic:
Because we won't move away entirely from the current asset classification?

Joseph Dear:
Well, in terms of reporting the quarterly performance result and all that, it will still be by asset class, and the benchmark performance against that. But the performance reports to you will also include these other dimensions – particularly, what is the exposure to the portfolio of growth risk, and what hedging strategies have we, can we adopt to deal with that. What allocation decisions are we making in view of a macro-economic forecast in terms of what Lorne

Johnson's talking about, leading economic indicators, what they would tell us about what to expect in the portfolio. Would we, for example, want more or less inflation protection in the relative near term?

George Diehr:
What we're talking about is on Page 1 of the Asset Class Roles and Outlook. Just maybe some people have been through it again and again, but some people may be new here, so this is what we'll have a motion on at the alternative classification which is then rolled out two… expressed two different ways by the individual assets and by the class… totals by the aggregate classification schemes. Okay. Pria?

Priya Mathur:
Thanks. Um, as a practical matter, how would the dynamic asset allocation… annual dynamic asset allocation work? Because we have more liquid asset classes and less liquid asset classes, so the ability to really affect significant change in sort of the more illiquid classes would be challenging, particularly downward. Right? I mean, it's one thing to add commitments but it's harder to sort of reduce your commitments as a percentage of the total portfolio. So I'm just curious…

Joseph Dear:
How it's going to look? What's going to be different a year from now…?

Priya Mathur:
Yeah.

Joseph Dear:
…in terms of allocation? Well, we do want to increase the frequency we look at the larger strategic asset allocation. I am not proposing that we do what we did this year every year, where essentially every Board meeting from March to today has had a considerable component dealing with asset liability. But we, as far as we get today and tomorrow and December, there's still more to go. I don't want to anticipate some of Allan Milligan's presentation on liability, but we can still do more on integrating the view from the asset and liability standpoint to help us understand and deal with risk.

But operationally, if, for example, we identify hedging strategies that we can afford to implement, there may be hedging strategies we'd like to use but we're not prepared to give up the return to actually make them real. Those would become a focal point of discussion in terms of here's what the portfolio looks like, here's the growth exposure, here's the inflation, here's the liquidity issues, here's what we think we may need to do. I don't want to underestimate or over create expectations we can't meet in talking about dynamic asset allocation.

This is hard to do for very nimble macro hedge funds. A $220 billion portfolio is not nimble and the challenge of making asset allocation decisions on something other than this long-term capital market review is a significant organizational challenge in terms of developing the capability to do that, the confidence to do it and then the willingness to implement it. We can impact portfolio performance by making relatively small incremental changes. In order to impact portfolio performance, we're talking about $5, $10, $20 billion asset shifts. The number of anomalies that would occur in the marketplace that would allow us to move to exploit those, relatively small. So we have to go about this very carefully.

But what you would see… but what I would expect a year from now, sitting in this room, how to… we're sort of how did it go? You should see much richer risk reports, have a much finer feel on the portfolio about what does the growth risk exposure mean, what is the inflation risk, and as we look at the unfolding of QB2 and federal finances, international finance, perhaps a higher degree of confidence that we've got a portfolio view that will enable us to manage through a variety of potentially more difficult economic scenarios, so that's probably the most still somewhat nebulous but perhaps a more concrete way of thinking. How will it change for you? How will it change for us? Better set of tools. More analysis to enable a better discussion of judgment factors about what we should be doing.

Priya Mathur:
You don't necessarily anticipate significant recommendations to change the asset allocation. I mean, unless something extraordinarily dramatic happens? Or do you?

Joseph Dear:
No, I think that real discussion will center around the ranges, whether the ranges. Whether the ranges will stay. We're effectively saying that equity is equity. Some of it is private equity, some of it is public equity and we want to look at the risk that's created by liquid positions and more highly leveraged positions, but the real risk is the exposure to equity is not between the private equity portfolio and the public equity portfolio. It's a better set of risk tools – not… it doesn't… The private equity portfolio is not one that lends itself to, well, let's get rid of, you know… let's take it down 5%. Joncarlo, you know, get on the phone and sell down 5% tonight. You know, that doesn't work.

Priya Mathur:
Right.

Joseph Dear:
So, um.

George Diehr:
I have Henry, then J. J.

Henry Jones:
I think that was part of my question as Pria raised the question, and I think I'll just wait until you bring the information back on that because I would like to have a discussion and dig a little deeper in that because I'm trying to understand the illiquid assets that we have. And, I mean, when we reacted last time, it was things had happened, and we were reacting to what had occurred, so if you start in that mode, you are reacting to what has occurred, you are constantly, you know, going to be reacting because things are going to change again.

George Diehr:
Are you thinking… Excuse me for interrupting. Are you thinking about 2008 and when…

Henry Jones:
Yeah. Right. Right.

George Diehr:
…the portfolio was under stress?

Henry Jones:
Right. Yeah. And so that's why I was trying to understand how this annual evaluation is going to work because if you are making decisions on an annual basis to something that has happened, or are you making the decision because of what happened. You're looking to the future, I mean, it's… I'm just trying to understand how that would work. So that's why I said I'll wait until you bring back your…

Joseph Dear:
Well, an analogy we like use is with better risk tools…

Henry Jones:
Uh-hum.

Joseph Dear:
…based on knowledge of the portfolio, we're trying to hitch the horse to the cart and take those tools and then get a forward-looking view about the portfolio. And that is a challenge whose difficulty I could not overstate. But that's the key. That's the key to developing the maverick stance or the competence to have a portfolio that looks different than what the conventional wisdom would dictate. And it has to be informed by risk, and it has to be, on the quantitative side, it has to be informed by judgment. And, again, what I hope will happen if you shift to the new classification is you get a richer perspective on what those choices entail. What those tradeoffs…

Risk is always a question of tradeoff, right? Risk is inherent in what we do. Can we take risks for which we'll be compensated? And will the compensation be in the direction that we hope to get it. So how do we bring to bear the information, the theory, the judgment, the experience you bring and the perspectives you bring as trustees to that decision. The only thing you know for sure is whenever you make those decisions, you're going to lack information you'd like to have to give you comfort about what the outcome of that decision will be. It's inherently uncertain.

Henry Jones:
Yeah, I just, you know, when you say on an annual basis, I just recall a discussion about how long it takes the battleship to be turned, and by the time you make changes, the battleship will be ready to change again.

Joseph Dear:
Well, if you do it less than every year, then, you know, if you're doing it on a two or three, then you're going to be even further behind. The question is are you going to try to, you know, anticipate – we're going to get into market timing.

Henry Jones:
Yeah.

Joseph Dear:
Which is really a… I'm trying to think of the right term, but, um, let's just say that there are reasons why people like me and the senior investment staff are trained not to believe that market timing is a solution to our return… accomplishment of our return objective.

Henry Jones:
Okay.

Joseph Dear:
But we know in times of stress, correlations converge, and so the diversification that we hope to have eludes us. We know that risk is more the volatility and we know that asset prices have regimes. They have a set of relationships which change over time. That they're much more fluid. They're not as stationary as the conventional theory would have us believe. And so if we're going to manage a portfolio, we have to begin to take those things into account, and so a structured conversation around that at least annually between your staff and the Board, I think, is a very appropriate way of bringing those issues to light. And some day we might say, "Yeah, it's a problem and we don't have a solution." It's just, you know, keep working on it. Maybe we'll have some solutions, too.

George Diehr:
J J Jelincic?

J J Jelincic:
First, an observation. On… In this section on Page 2, um, it listed the Cash… Return Cash Yield from Real Estate is low in the thing that I have it was medium on that. I assume that's correct?

Farouki Majeed:
Yes. Medium is correct.

J J Jelincic:
Yeah. Okay, so I just wanted to point that out for anybody who may have wanted to correct the one in their binder.

Farouki Majeed:
Thank you for pointing that out.

J J Jelincic:
The… Why would we not go to this alternative structure? Or is it a slam dunk?

Joseph Dear:
Are you asking me to argue why you shouldn't make the change?

J J Jelincic:
Yeah. Why should we not make the change?

Joseph Dear:
I have to pause. I haven't been working in that… I've been in the sales mode, and now I have to go to the anti-sales mode.

J J Jelincic:
Well, you can't be a good salesman if you don't know the argument against your policy.

Joseph Dear:
That's why I'm going to give you an answer really quick. I think I would say, "What's the difference?" Is this just a question of slapping some new labels on the same set of assets and that's it's really not going to provide what I said – additional information, perspective, a set of tools that will help you understand what the overall risk in the portfolio has. You know, somebody read an interesting article about bringing it in, but there's nothing really new here. Um, I can't make a strong case because… because we spent a lot of time trying to think about the problem we have, achieving the return objective. The seven and three-quarter or whatever choice you make.

And since the day I got here, a year and a half ago, it's always been about how do we improve our risk management. How do we, as a staff, improve our communication with you about what's going on in the portfolio and what are the

real choices. So this alternative classification, I think, is a major step towards that more informed, richer discussion. You can then say, "Well, gee, we can still have that discussion without changing classification. You can just have a more robust discussion of risk."

But I think this approach facilitates that in a significant way, and… and this might be the most important reason… I'm now switching back to why you should change. Um, it sets us on a course that breaks us away from a slavish devotion to modern portfolio rate and mean variance portfolio optimization as the tool we're going to use. It recognizes the limitations of that approach which has been vividly exposed by actual experience. It doesn't answer all of the questions about what replaces it, but it says, "We're going to look at the underlying risk characteristics, we're going to measure them better, and we're going to understand other dimensions of risk besides volatility.

J J Jelincic:
So that explains why you got the Sharp wisdom right this time.
What the…

Allan Milligan:
He would not disagree with you where this is going wrong.

Priya Mathur:
Use a microphone.

George Diehr:
Allan is just saying that Dr. Sharp didn't disagree with where this is going.

Allan Milligan:
Right.

J J Jelincic:
Um, if we adopt this new way of looking at our assets, does it have any implications for what are benchmarks ought to be?

Joseph Dear:
Not directly. Indirectly it does because the real question here is how much risk do we want to take, and how do we describe and attribute that risk to the choices in front of us? And so the degree to which those risk decisions – how much equity risk, how much… excuse me, how much growth risk, how much inflation risk, and then do the benchmarks or our targets to beat to exceed those benchmarks, are they realistic within that framework? That's what the risk budgeting conversation will be about. And at the point we really succeed in implementing a risk budgeting approach, then we'll have another ability to say is meeting the benchmark the key thing, or are we really talking about benchmark

in terms of Sharp ratios or information ratios, and the actual contribution in terms of improved return based on the amount of risk taken to achieve that.

J J Jelincic:
And what kind… What additional risk tools, if any, do we need going with this alternative classification rather than a more traditional…?

Joseph Dear:
Well, some of the tools are simply a data that we're… whose accuracy we're confident about. A system of governing data, of defining, keeping, assessing it. Then the software tools necessary to analyze that – to give us a view of risk across the whole portfolio that's not limited to an asset class. For example, we have equity positions in large companies, we have real estate. The real estate is often leased to these same companies, but we have no way of knowing what those exposures are today, so how that would build up in the portfolio, just to give you one example.

We have thousands of private companies, but we don't integrate them into the overall risk database. For example, essentially our largest equity exposure now is a company in the private equity portfolio that's soon to be listed but it actually exceeds the… it's Line Double Cells. It's not a secret. Our position in that company exceeds the concentration we have in any other company we have in the portfolio, but if we just print the list out that we show you in the supplemental report, Line Double Cells not there because it's not in the index, and we don't have an index weight position, so we, you know, we have to remember to include that. A holistic view of the portfolio and a set of tools to show that wouldn't… we wouldn't have to send somebody off on a special assignment in the afternoon to go integrate the data. It would naturally be there because of the tools we have.

J J Jelincic:
Well, wouldn't we need those tools, quite frankly, whether we stuck with the current classification or the alternative?

Joseph Dear:
Absolutely. Absolutely. Yeah.

George Diehr:
Thank you.

Tony Oliveira:
Well, Joe, I like the plan, and as far as that annual review, I… Interesting parallels. You and I have had a lot of discussions about agriculture. We in agriculture are long-term players. I'm in my forty-fourth year and all my neighbors are in their fiftieth and sixtieth year, and being that it's considered it's the most risky business, how do we survive? We survive by managing risk on a daily basis. And on an annual basis, we have the choice of changing cropping

patterns – if it's a drought or if it's a wet year. And what you are proposing is really very similar to that. We're in that system. We're doing it. We're long-term players, but we have the ability to change those directions and it's really based on risks, you know. You're not planting cotton if it's a dry year, you're planting grain. So I liked your proposal, and I certainly like the approach to risk.

George Diehr:
Do we need a motion? Ms. Mathur?

Priya Mathur:
I'll move that we approve the alternative asset allocation classifications as a method of our doing asset allocation.

George Diehr:
Moved and seconded. Any further discussion? All right, seeing done. All in favor with Aye.

Collective
Aye.

George Diehr:
All those opposed Nay. Any abstentions? Motion passes. Okay. Thank you. I think we're ready to move to the next topic. That's right. Mr. Majeed is going to… Are you going to introduce him?

Farouki Majeed:
Well, he needs no introduction.

George Diehr:
Well, he needs no introduction.

Farouki Majeed:
He is the middle part of the problem we are trying to solve.

Joseph Dear:
Now let me say I've got to make a quick diplomatic recovery here. If it wasn't for Allan and the liabilities, there'd be no need for an investment office.

Allan Milligan:
I agree with Farouki.

George Diehr:
Okay.

Allan Milligan:
Sometimes I think I'm the bearer of…

J J Jelincic:
You know, it could be the other way around. He's the one trying to solve the problem they're creating.

Allan Milligan:
Thank you, J. J. I like that point of view better. Yeah, sometimes I feel I'm the bearer…

J J Jelincic:
I didn't say it was wrong. I just said it was a possibility.

Allan Milligan:
Sometimes I think I'm the bearer of bad news far too often lately. Obviously, these are challenging times. Sorry. They… really what I'm here to do is to help make the link between the asset allocation process and our liabilities. And to also raise a few issues with you – things that you need to keep in mind throughout the rest of the process. Did I just revert back to my community-ism? No, I didn't. I'm sorry. So the… That's right.

The nature of our liabilities… The nature of our liabilities are really that it's a stream of benefit payments. It's an uncertain stream of benefit payments that is sensitive to economic conditions. The stream of benefit payments vary by employer, by plan and by tier. So these are not kind of the same stream of benefit payments for everyone. And another aspect of these is that there is some of them are pooled. The risks… The demographic risks on some of them are pooled. So we'll get into that at the end.

J J Jelincic:
Allan? Just how uncertain are those liabilities. I mean, given the world of large numbers, given that at least part of the membership is retired and we know what that stream is because the actuaries have figured out how long these people are going to live…

Allan Milligan:
Give me a second, J. J.

J J Jelincic:
Okay.

Allan Milligan
And I'll get there.

J J Jelincic:
Okay.

Allan Milligan:
Um, so the stream of benefit payments, in a way, that's one way to look at what our liabilities are. Now what we're really doing is we're paying benefits to real people. It's not this kind of abstract stream of benefit payments, but for the purpose of what you're doing today and tomorrow, one good way to look at the liabilities is exactly that. It's a stream of benefit payments. The payments occur over many, many years. They're retirement benefits… A couple of examples would be retirement benefits and life-time survivor benefits. There's also a bunch of lump sums that we pay. But when you combine the lump sums with the stream… you know, the other streams of benefit payments, it all kind of comes out looking like a stream of benefit payments.

They vary over time. Some of the uncertainties that are involved in these benefit payments are… There's uncertainty as to the timing of the benefit payments. Now as J. J. just sort of alluded to, some of them are fairly predictable with… You know, with a large number of retirees, we can fairly accurately predict how many of them we will be paying benefits to over… over time.

But the… some of the other aspects of the benefit payments are not nearly as certain. Retirement rates. We know that the retirement rates are affected by economic conditions. And since we can't necessarily know what economic conditions are going to be like, we can't necessarily know exactly how many… how much in the way of benefit payments, we are going to be paying over time. So the uncertainty – there's a really uncertainty in terms of the timing of the benefit payments.

Also, the amount of the benefit payments. The amount of benefit payments are determined partly based, a large part, on salary levels – pay levels. And those are not fixed. Those are not perfectly predictable. So there's a fair amount of uncertainty in the benefit payments. The duration of the benefit payments are… is one of the more predictable aspects, which is to say that certainly when we have a large number of retirees, mortality and survivorship are fairly predictable.

However, I would caution you that the reality is that we are not one single pot of money. All of the different local agencies… Well, all the non-poolable local agencies (about 400 local agencies) are running their own plans, and they have between one hundred and… what was it you decided, somewhere over 10,000… 15,000 members. So we are… So those, you know, the 15,000 end it's very predictable. At the hundred end, it's not quite so predictable. Um, with the public agency, the smaller employers we've pooled to get back that predictability. So there's a mixture here.

I think one of the key things that people fail to really understand is just how sensitive our stream of benefit payments are to the economic conditions. The amount of the benefits varies based on salary level, and they are partially

inflation protected – some more so than others, depending on which plan they're in.

The timing of the benefit payments are indeed effected by economic conditions. We've seen a fairly dramatic example of that in the last year or so where retirements have spiked up pretty substantially, and we're pretty confident that that's related to the state of the economy. The other thing is that the recognition of the… what the liability is is effected by the liability calculation, which is again sensitive to the economic conditions – both the discount rate and the inflation assumption impact our calculation of the liabilities.

Robert McCory :
Bob McCory, from EFI Actuaries. Just a couple issues to this point. First of all, Allan asked me to sit in as a color commentary here. And, of course, you can understand we have one actuary sitting in by color commentary for the other, it's going to be a bad, bad enterprise to start with. But just a couple comments. You know, when we look at risk and volatility that's caused by various factors, things such as demographics, mortality, retirement rates or so forth are there. They clearly provide some volatility, but it's about an order of magnitude lower than what's provided by investments. So it's… There's really a very large difference. It's there, but in comparison to what's typical in a pension plan with risky investments, it's relatively small.

The same thing… By the same token, I would ask you to distinguish between a stream of benefit payments, which is what is real, versus the liability, which is a measurement of something that's real. Okay? And that's a very important distinction. The stream of benefit payments is this wonderful, complicated stream, going out into the future with lots of variations, and people involved in it, and life and death and all those good stuff. What we do with a liability is we discount all of that back to a single point – a single dollar amount – using a discount rate. And so you're squeezing all this wonderful, complicated behavior back into a single number, and you lose a lot in the process. Moreover, the liability is very dependent on what you use as the discount rate. So you're not funding the liabilities, you're funding the cash flow of the stream of benefit payments from the fund, not the liabilities. So just make that distinction as we go forward. Fair enough?

Allan Milligan:
Yes, J. J.?

J J Jelincic:
You said the retirements are effected by economic conditions. Are they positively or negatively correlated to the economy?

Allan Milligan:
Yes.

Robert McCory:
I'll second that. Yes.

J J Jelincic:
I mean, it would seem to me that when the economy is bad, people would tend to hang around a little longer, unless you work for the State and you get punished and so it's, "I'm out of here because I'm fed up!"

Allan Milligan:
Yeah. I think that different… different things in the economy can effect… effect people differently. Um, I'm pretty confident that the furlough – three-day-a-month furloughs – that we've had for the last year or so had a significant impact. So there's a case where it's negatively correlated, which is the economy is bad but retirements go up. On the converse of that, if the economy is doing well, and you are getting really good investment returns in your private portfolio, that can also cause you to retire early. Um, so it depends. I think there's a lot of interacting factors, and I think it can go either way. You can have a positive correlation or a negative correlation, or both positive and negative at different times within a fairly short cycle. So we know that they're impacted, but it's not a very… it's not a simple, "It's a positive correlation," or "It's a negative correlation."

J J Jelincic:
Is it…? I was kind of wondering if it didn't kind of create a natural hedge… since you hedged in a way, it didn't…

Allan Milligan:
Okay. I'm going to try to move this along fairly quickly. Um, another aspect of our benefits are that they are… that they differ by the economy… I'm sorry, by the employer, by the plan and the tier. These can be actually pretty significant differences. A very, very obvious one, safety versus miscellaneous plans. I think we're all aware that safety plans have significantly earlier overall average retirements, and generally, accrue benefits at a faster rate. So you would expect a safety plan to have a higher portion of retirees to actives, and there you're funding essentially a fairly similar benefit over a significantly shorter career and paying out that benefit for a longer period of time. That does effect this stream of benefit payments and the calculation of the liability that Bob mentioned. The…

The ratio of the number of actives to the retireds is very important. For an employer with a high portion of retired members, their level of assets relative to their payroll is going to be significantly higher. That will mean the plan is more sensitive to investment returns. Significantly more sensitive to investment returns, and their contribution volatility will be greater. The converse is also true. If you have a relatively low level of retired members to active members, then you will be relatively less assets, less sensitive to investment income, less impact on contributions.

Um, one aspect that's, I think, emerging right now is that we are seeing more new tiers of benefits, and that may mean that, you know, I would expect over the next decade or more that asset to payroll ratios will tend to rise as the existing members continue to get older, to put it bluntly, and we continue to build assets to provide for their benefits. But at some point that should turn around because of the tiers of benefits. Now it's only going to tier… turn around for an employer who has adopted a lower tier of benefits. Um, so it will be… probably will be true of CalPERS as a whole, but we are this collection of plans. And some plans will be… should see that asset to payroll ratio go down over time. That this will work… this will evolve over... over decades.

Risk pooling. It does share the demographic risks. It really does help minimize the demographic risk relative to investment risk. Bob's absolutely right that the demographic risk, generally, has much less of an impact on employer contributions than investment risk. That… That was not really true for the smallest plans before we put in place risk poolings, but with risk pooling in place, that's now very much the case.

One thing about risk pooling that's not obvious is that it only applies to demographic risks. It does not alleviate investment risk. Investment risk – every employer effectively gets the same rate of return on their assets and so, um, there's no, you know, sharing of that risk. That risk is effectively borne on each plan. Um, there is a case, you know, there is an effect whereby gains and losses are amortized over payroll to the extent that the plans in a pool have a very similar asset to payroll ratio, everything works out great. For a small number of plans have significantly different asset to payroll ratios and that may result in slightly different impacts on them. We're going to be taking a look at that.

So I'm probably going to skip over this funding process a little bit. I'm going to bring us back to Allan Emkin's slide on that tank of water. And I'm going to sort of expand it a little bit in that there are three sources of water coming into that tank. There are member contributions, which are very stable. We know very closely what that flow rate is going to be. There's the investment income. I'd liken that to a stream that will be gushing water at a huge rate if it rained last night and will be, you know, could be dry a day or a week later. Um, so it's a very uncertain stream. It comes and it goes and we have to deal with it. And the way we deal with it is the third stream coming in, which is the stream of… stream of contributions from the employer. To the extent that the stream was gushing water because it rained last night, we probably want to slow down the rate of employer contributions going into the tank because we're going to… we're expecting it to fill up very quickly. Conversely, if the stream of water has pretty much dried up, it's been a week since it's rained, we need to start putting more water… throwing more buckets of water into the tank. So the employer contributions – that's the nature of what we have here. And it's really the

actuary's role to make that… make that all work out over time. And, uh, without knowing how quickly that stream is going to be flowing, it makes it rather difficult.

I did want to talk a little be about just how sensitive that is. Generally, about 75% of investment income into a pension plan is coming from employer… I'm sorry, coming from investment income. The remaining 25% is split between the member and employer contributions. I think if you look at the last 20 years you'll find that the portion that came from in… from employer… I'm sorry, from investment income is lower than 75%. I think that's a fairly anomalous period. But this is… this is kind of what we're expecting. And so if only a portion of that 25% is coming from employer contributions, and 75% is coming from investment income, that tells you that the employer contribution is going to have… be… be fairly sensitive to whether or not you are getting that 75% coming from investment income. So the employer contributions are very sensitive to this leverage on the investment income.

Asset to payroll ratios, generally about 4 to 6 for a miscellaneous plan. Currently, probably closer to the 4 end than the 6 end, but that has a lot to do with the fact that there were market losses in '08/'09, and the assets are suppressed at the moment. Safety plans, more like 6 to 10 is your asset to payroll ratio. So for a 10% investment loss, what you're looking at is a 40 to 60% of payroll loss for a miscellaneous plan and a 60 to 100% of payroll loss for a… a safety plan.

And a 10% loss is, you know, we have a standard deviation of our investment returns of more like 12%. So we are quite sensitive. At 12%... a 12% standard deviation with an asset to payroll ration of 10 means that one year out of three you're expecting to lose more than 100% of pay. That will have significant consequences to employer contribution rate volatility, and we can smooth it as best we can, but ultimately we can't smooth that level of volatility out completely. It will come through in the employer rates, and… unless we get very lucky.

J J Jelincic:
So we should move to the JRS model?

Allan Milligan:
No.

J J Jelincic:
It would create some stability.

Allan Milligan:
It… The JRS model does have very great stability in contribution rates, but it's at the expense of not having any investment income to offset the costs of the benefits.

J J Jelincic:

Can't you have it both ways?

Allan Milligan:
You cannot have it both ways. So I want to move on a little bit into what we should be expecting in the way of employer contribution rates. Currently, they are expected to increase because of the asset loss in 2008/2009. Asset smoothing has delayed the aspect of that asset loss. That's the reason why employer contribution rates are still going up and haven't already… it hasn't already been built into the rate. Smoothing delayed the increase or, you know, is causing that increase to happen incrementally over a few years instead of all at once in a single year.

The amount of the increase will differ by plan. All of those factors that effect that asset to payroll ratio will also impact the… how much of an… how much this is going… that asset loss is going to impact employer rates. Okay. So we… This has been presented to the Board before, but we're going to… maybe not in this succinct a format.

We took a look at just what are we expecting in the way of employer contribution increases. Well, in '12/'13 we're expecting public agency miscellaneous rates to go up about .4 to .6% of pay and safety rates by .6 to .8% of pay. So '12/'13 is not the worst year. The bigger year is '13/'14 where we're expecting a 1.8 to about a 2.8% increase in the… of pay. 1.8 to 2.8% of pay increase in the employer contribution rates for a miscellaneous plan and 3 to 4.3% pay for a safety plan.

J J Jelincic:
Allan that's…

Allan Milligan:
J J

J J Jelincic:
Those are each incremental, so it's .5 this year and then 2% of 1.5 next year.

Allan Milligan:
Point five percent (.5%) this year. Maybe another 2 ½% next year.

J J Jelincic:
Based on the higher base, not the…?

Allan Milligan:
They are at… They are… They are additive. I'm not showing you the cumulative increase, I'm showing you the year-by-year increase.

J J Jelincic:

Okay.

Allan Milligan:
The cumulative increases are greater. Tony.

Tony Oliveira:
Allan, I just… I want to put that in perspective for everybody since I know what our county's rate is. I know what our volatility is. I think your average or mean there for the three years, it is a 35% increase to what King's County pays now as an employer. So put that in… And we're one of the more – I hate this word, but I've got to use it in this particular case – we're one of the more conservative ones as far as the way we run the county. So depending on where your volatility index is, you can have some people that are substantially higher than that. The question I have with you, and you did a good job. I liked the way you explained that and this helped because you did… that action of the Board did spread that out. Does this, I assume… I'm not going to assume. Does this take into consideration a reduction in the assumed rate of return? The discount rate of return?

Allan Milligan:
This does not include the impact of a reduction in the assumed rate of return.

Tony Oliveira:
Okay. And I remember you saying that an order…

Allan Milligan:
I'll get there, Tony.

Tony Oliveira:
Okay. I just want to remember… So we'll have a reference point, can an average county/average local government, based on this before we do that, is looking at a 35% increase of the employer contribution cumulative by the time we reach 2014?

Allan Milligan:
Yes. You're talking about a relative increase in the contribution, not a, sort of, absolute percent pay increase. But yes, that's exactly… That's pretty…

Tony Oliveira:
Okay.

Allan Milligan:
Yes, that's pretty close to what we've expected.

Robert McCory:

One of the rules of the actuarial color commentator is that after the first actuary has told you how bad things are, I'm supposed to say, "Okay, but it's even worse than that." One of the things not only will your cost increase, but the volatility of your cost will increase as well. Now you have a certain structural level of volatility now that's built into your plans. As your plans mature... And what I mean by that is that the… that the SP400 and other plan improvements work their way through and the Baby Boom retires, that ratio that Allan was talking about of assets to payroll, liabilities to payroll will start to increase. That in and of itself will increase the cost of volatility.

As your assets improve… As you start catching up and getting toward 100% funding, we hope, that will increase the volatility because you'll have more assets relative to payroll. We've already had comments earlier this morning that the markets are getting more volatile, and if that weren't all bad enough, to the extent that there is downsizing or failure to rehire among active members, that will increase cost volatility as well. Because what's happening is you're taking asset volatility or liability and you're spreading it over a narrower payroll base. So costs are not only going up, they're becoming more volatile.

George Diehr:
I think on the bad news, to add to it, Allan, I agree that the… That getting what used to be 75% of the liabilities were covered by investment returns… And you said that it's anomalous that we're now down to 65% percent or something – I don't know if used the number – but seeing that yes there was an anomaly, but we're not going to climb out of that very quickly because we're not going to move back to a… we're unlikely to move back to a funded ratio that's been the 80 or 85% range very, very quickly, we've… that's… That was a very heavy hit and we're going to crawl back slowly unless something very strange happens.

Allan Milligan:
Yeah. That was really kind of what I'm illustrating here is really just how sensitive things are to the investment income. And that's kind of made by both that downward looking things but also this asset to payroll ratio and thinking about what the impact of that is. Those are really both kind of getting at the same point, which is that your employer contributions are quite sensitive to your investment income and your investment returns. Steve?

Steve Coony:
Just to reemphasize, you said this morning, and I just heard again with regard to downsizing, we're going to likely to see that result in a big way over the next few years. You're going to have a number that's much… this higher retirement rate is going to continue, and we're not going to replace those positions, and layoffs are going to proceed at local government level and heavy attrition at the state level. My request is, uh, I know you usually get these things squared away later in the year when you do your demographics report, but I think it's going to be very important for planning purposes for this year's state budgeting, probably for

local budgets as well, for you to tell us, before we make the decision on the rates – what the impact at 5%, 10% reduced workforce statewide – state and local governments going to mean… It's bigger than that, but it's certainly going to be in that range in terms of positions that are open for which there is going to be no… no deduction employer or employee contribution being made and the retirements will continue. It seems to me that without those younger folks coming into the system, obviously, it's going to take a whole lot longer to… to catch up, especially since they're all supposed to be getting a higher contribution rate for…

Allan Milligan:
Thank you.

Steve Coony:
I hope that will be an ingredient in your final set of statistics, if not recommendations.

Allan Milligan:
We'll definitely take a look at that when we do the state of schools evaluation. We'll also try to take a look at it, um, for the other plans. I think, especially, well… I'm not sure whether… I need to think about this for the judges and legislative plans.

Robert McCory:
I think they're just… they're just scenarios that I think we ought to look at when we're being asked to look at our… required to look at scenarios… In terms of returns, I think we ought to be looking at scenarios in terms of the actual membership.

Allan Milligan:
Okay. I'm going to skip ahead a little bit. Um, I've got a section on modeling and its limitations, but I particularly want to, sort of, concentrate… point out three limitations on our… on our modeling, um, that you should be aware of and be thinking about when you're making your decisions. Um, we've modeled the… in our modeling, which we'll see especially tomorrow, although we'll be talking about it later today… Um, we've modeled the PERF as if it's a single plan, so we have not taken into account the differences between safety and miscellaneous plan. What we have is kind of some sort of mish-mash of the two – somewhere in between the two. Somewhere in between your typical safety and your typical miscellaneous plan. Um, so the actual plans will… results will vary from what you see now and tomorrow, and the… The result of the oversimplification is probably that it's going to understate the level of volatility of employer contributions and the level of employer contributions for a safety plan. It should overstate it. As a result of this reason, it will tend to overstate, um, for a miscellaneous plan. So safety plans, more sensitive than what we're showing. Miscellaneous plans, slightly less sensitive.

A second simplification that's built into the model is that we have used a fixed discount rate. We used 7-3/4% return in calculating the liabilities and the contributions. And as I think you're aware, we're going to be talking about the discount rate. I'll get to that very shortly. Um, so that's an issue that will… overall we're probably understating the contribution rate because if we do go to a lower discount rate, that will increase the contributions.

Um, note that the previous increase we talked about due to the asset return, that's baked into the model. That is anticipated with the… by the model. The discount rate issue is not built into the model. The other thing is especially at lower risk levels and lower expected return levels, this may be a flaw in the model that… that we need to talk about, but the contribution rates at the lower risk levels will be higher than as shown. I want to sort of point out to you is that this is a 10 year model that we are evaluating. We're not looking at the end of a 10 year period. We're not looking forward into future. We're not, sort of, evaluating the results at each point over the next years. We're taking a look 10 years out and we are just looking at that. So again, this is due to our… because of our asset smoothing policies, which are really quite long term, this may actually tend to result in a slight understatement of the volatility overall in the modeling. So three things to keep aware of. Unfortunately, I do sound like the bearer of bad news but that is, I thought, something that you needed to understand about the model before we get into the results tomorrow.

We're going to… Just about to about to call you John, Terry. Terry.

Terry McGuire:
Why do we use a 10 year model?

Allan Milligan:
The 10-year model… The stuff I skipped over to talking about the simplification, any model like this you have to make compromises. Um, what we have is a system that is so complicated, if you tried to model everything properly and as well as could be done, you would end up with a model so complicated you'd never get a result out of it. Um, so what I'd say is that the 10-year result is a bit of a compromise, um, between the actuarial office and the investment office. I would have much preferred a longer projection period, but in terms of, you know, getting a result, we have to make some simplifications. This was one of the ones we chose to do… to make.

Richard Roth:
Well, also let me add that we felt that 10 years is a good period for estimating asset returns. It's not… It's not so long that we can't provide some near term view on what asset class types can deliver, but it's not so short that we can't include enough history to have a good perspective on it. So we felt like on the asset side it's a pretty good period to use, but we do recognize on the liability side, they live more in a 35 year type smoothing timeframe.

Allan Milligan:
Tony.

Tony Oliveira:
Well, I hate to keep coming back to this, but I want to keep this in perspective because I've been very proud of CalPERS the last couple of years, especially the work that Ron and Allan did in preparing local governments for what was coming in the state, and certainly I've been preparing the county for three or four years, but I just calculated, based on if the discount rate, and I'm going to be… I'm going to reduce it a little bit because George and I did our numbers over, if you take the previous 35% increase we're going to have because of the loss dropping the discount rate from 7-3/4 to 7.5, Kings County will look at a 55% increase in employer contributions over the next 3 years.

And the reason that information is important, and the reason that we have to be so transparent, doesn't alter what the investment groups do because you have to do what is fiducially responsible to do… because the last thing during this period is that we need more volatility. We need you to do your job. But from a local government and the state, all of these numbers and all the things that are coming are very important to get out there to people to plan for this, because if they don't, the volatility actually increases rather than decrease because they're in in plannings, you know, many local governments are preparing for July 1st of '11 by you laying out these numbers and doing this planning. The reason that you were looking… Is that those three years… getting that information out there two and three years, people start making decisions or in actually, like you said, it gets worse. They kind of work in the other way.

And then the other number that I think is very important for agencies – I'll talk specifically for local agencies – is given, you know, we just reported a nice return for last year – given what we kind of see going forward, is how many years out there based on our discount rate – our new assumption – how many years before they can see that even flattening out or going the other way? Those are big and major decisions factors for local governments to decide and make decisions in the future.

Allan Milligan:
I'm going to quickly move on to the discount rate because I absolutely have to get here. Our current discount rate is 7-3/4% return. We adopted… Last time we took a hard look at this was in February of 2008, just after we did the last asset… full asset/liability workshop, and that was based on an assumed rate of return on 8.04% long term, net of administration… administrative fees. So in effect, we didn't say it… we didn't describe it this way at the time, but we left about 29 basis points, about .29% as a margin for conservatism. We set the discount rate a full quarter percent below what we were expecting to achieve, and that is a geometric return, not a arithmatic mean, which is important to those

who look at this. So where are we today? Well, um, this… this isn't perfect but it really gets across the point. Equivalent single rate is actually probably a little bit less than the 7.82% that I've shown. So basically what I'm combining is 7.37% return for the next 10 years with an assumption that longer term will get like the more like the historical returns that were going to face headwinds for the next decade or so, but that we would expect things to ultimately revert back to the really long-term means and that would be more like just over 8% return. Um, so we'd be sort of equivalent single rate maybe 7.82%, knock off a little bit for margin for administrative expenses. We're down below our 7.75% return, but probably above 7-1/2%. So… but to keep the same level of reserve of margin as we had in February 2008, or at least we that thought we had in February of 2008, we would actually have to be… we'd be looking at probably a 7-1/4% return. So 7-1/2 to 7-1/4, assuming that there's no change in the risk stance is probably what we're looking for… looking at in a way of a discount rate assuming that the Board essentially makes decisions very similar to what you elected to do back in February of 2008.

Um, which is what I already said. So the discount rate. What will changing the discount rate do to employer rates? So I've shown two scenarios here. We changed the discount rate to 7-½ and we changed the discount rate to 7-1/4? These are the state miscellaneous plans. These are all expressed as the increase in the employer contribution rate as a percentage of pay. State miscellaneous 2.3% or 4.8% depending on what discount rate is chosen. POFF is the second largest state plan, 3.3 or 6.8% of pay contribution increase. And a schools pool which is also very large, 1.9 to 3.9% of pay. So these are pretty significant contribution increases if we do drop the discount rate. Steve?

Steve Coony:
For state purposes can you (1) blend the rate at 7.25%. Is that some place around… between 4.8 and 5, or… and can you convert that into this year's payroll and tell me what that translates into in billions?

Allan Milligan:
Um, I haven't done that.

Steve Coony:
But if you did?

Allan Milligan:
You'd be looking at probably about just between 2- ½ and 3% of pay and the state payroll is on the order of, are you talking general fund or all state contributions?

Steve Coony:
Say all funds.

Allan Milligan:
I want to say it's on the order of $20 billion. So, 2-½ to 3% of that. I'm not going to risk doing math in my head in public here. This is an equivalent chart for a… equivalent table for local agencies and yeah, we're talking some pretty significant contribution increases. Um, and we did give employers a heads up that this might… that there'd be contributions increases of this magnitude if the Board elected to change the discount rate at the employer forum a couple of weeks ago. So, yeah, we have been communicating this to employers, and we will continue to do so. Um, this is something that is pretty significant, and it will be impacted by your decision tomorrow. The less risk that you want to take, the lower the expected long term rate of return, and the lower the discount rate that I need to use. So, um, there's not a lot of good choices here. And just to sort of really depress everybody, this is kind of what the combined affect of the asset losses that are just being built into the rates as well as a discount rate change will be. You're looking at 6 to 10% of pay for miscellaneous plan or 10 to 16% of pay for a safety plan. The combined effect that's over 3 years, and the high end of that would be going to a 7-1/4% discount rate.

Male Panel Member:
Allan, all these assume that you actually earn the actuarial rate of return in those intervening tables.

Allan Milligan:
And all of those assume that are actually in our assume rate of return in those years, intervening years. Um. The remainder of my presentation was just going to be discussion about some future changes to the process but I think I'd rather give you an opportunity to ask questions.

Henry Jones:
Yeah, Allan, where's the combined effect for schools and state? Do you have a chart for that?

Allan Milligan:
I have not created a chart for that, uh, Mr. Jones, we can get that to you quickly. Any other questions?

J J Jelincic:
Allan you did say this 6 to 10% for miscellaneous was over the three year period?

Allan Milligan:
That's over the three year period and that one is combined. Well, if there's no other questions, I think I'm going to turn it over to, is it Bob?

George Diehr:
I guess we're at break time. So we'll take a break now, 15 minutes.